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## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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<b>Application Number</b>	09/742,421
<b>Filing Date</b>	December 22, 2000
<b>First Named Inventor</b>	Sofiène Affes
<b>Group Art Unit</b>	2661
<b>Examiner Name</b>	
<b>Attorney Docket Number</b>	AP660761US

## **U.S. PATENT DOCUMENTS**

Examiner Initials	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	1A	6,097,771		Foschini	08-01-2000	
	1B	6,067,290		Paulraj et al.	05-23-2000	
	1C	5,341,395		Bi	08-23-1994	
	1D	5,761,237		Petersen et al.	06-02-1998	
	1E	5,872,776		Yang	02-16-1999	
	1F	5,363,403		Schilling et al.	11-08-1994	
	1G	5,467,388		Takeuchi et al.	11-14-1995	
	1H	5,553,062		Schilling et al.	09-03-1996	
	1I	5,563,610		Reudink	10-08-1996	
	1J	5,621,752		Antonio et al.	04-15-1997	
	1K	5,648,968		Reudink	07-15-1997	
	1L	5,719,852		Schilling et al.	02-17-1998	
	1M	5,734,647		Yoshida et al.	03-31-1998	
	1N	5,799,004		Keskitalo et al.	08-25-1998	
	1O	5,859,879		Belgrano et al.	01-12-1999	
	1P	5,862,124		Hottinen et al.	01-19-1999	
	1Q	5,897,034		Suzuki	03-23-1999	

## **FOREIGN PATENT DOCUMENTS**

Examiner Initials	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
BB	1R	EP	0 951 091 A2		Lucent Technologies	10-20-1999		
BB	1S	EP	0 491 668 A2		Ericsson - GE Mobile	06-24-1992		
BB	1T	EP	0 641,102 A2		Philips Electronics UK Limited	03-01-1995		
BB	1U	WO	97/02666		Nokia Telecommunications OY	01-23-1997		
BB	1V	WO	99/01946		Nokia Telecommunications OY	01-14-1999		
BB	1W	CA	2,202,116		Liang Hsu et al.	01-18-1998		
BB	1X	EP	0 526 439 A1		Ericsson - GE Mobile	02-03-1993		
BB	1Y	EP	0 815 355 A2		NTT Mobile Communications	09-14-1994		
BB	1Z	WO	92/10890		Qualcomm Incorporated	06-25-1992		

Examiner Signature S. Shourie Date Considered 11/9/04

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Group Art Unit	2661
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Attorney Docket Number	AP660761US

### OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate); title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
SB	2A	"Wideband DS-CDMA for next generation mobile communications systems", by F. Adachi, M. Sawahashi and H. Suda in IEEE Communications Magazine, vol. 36, No. 9, pp. 55-69, September 1998.	
SB	2B	"Multiuser detection for CDMA systems", by A. Duel-Hallen, J. Holtzman, and Z. Zvonar in IEEE Personal Communications, pp. 46-58, April 1995.	
SB	2C	"Multi-user detection for DS-CDMA communications", by S. Moshavi in IEEE Communications Magazine, pp. 124-136, October 1996.	
SB	2D	"Minimum probability of error for asynchronous Gaussian multiple-access channels", by S. Verdu in IEEE Trans. on Information Theory, vol. 32, no. 1, pp. 85-96, January 1986.	
SB	2E	"Optimum detection of code division multiplexed signals", by K.S. Schneider in IEEE Trans. on Aerospace and Electronic Systems, vol. 15, pp. 181-185, January 1979.	
SB	2F	"Cancellation techniques of co-channel interference in asynchronous spread spectrum multiple access systems", by R. Kohno, M. Hatori, and H. Imai in Electronics and Communications in Japan, vol. 66-A, no. 5, pp. 20-29, 1983.	
SB	2G	"A family of suboptimum detectors for coherent multi-user communications", by Z. Xie, R.T. Short, and C.K. Rushforth in IEEE Journal on Selected Areas in Communications, vol. 8, no. 4, pp. 683-690, May 1990.	
SB	2H	"Very low rate convolutional codes for maximum theoretical performance of spread-spectrum multiple-access channels", by A.J. Viterbi in IEEE Journal of Selected Areas in Communications, vol. 8, no. 4, pp. 641-649, May 1990.	
SB	2I	"Multistage detection in asynchronous code-division multiple-access communications", by M.K. Varanasi and B. Aazhang in IEEE Trans. on Communications, vol. 38, no. 4, pp. 509-519, April 1990.	
SB	2J	"Combination of an adaptive array antenna and a canceller of interference for direct-sequence spread-spectrum multiple-access system", by R. Kohno et al. in IEEE Journal on Selected Areas in Communications, vol. 8, no. 4, pp. 675-682, May 1990.	
SB	2K	"Decorrelating decision-feedback multi-user detector for synchronous code-division multiple-access channel", by A. Duel-Hallen in IEEE Trans. on Communications, vol. 41, no. 2, pp. 285-290, February 1993.	

<i>D. Afes</i>	Date	Correspondence	Examiner
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Application Number	09/742,421
Filing Date	December 22, 2000
First Named Inventor	Sofiène Affes
Group Art Unit	2661
Examiner Name	
Attorney Docket Number	AP660761US

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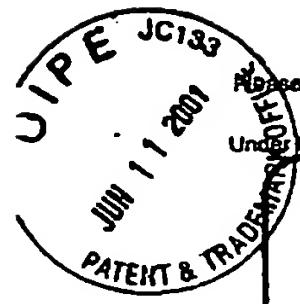
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### OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
	4A	"Interference subspace rejection in wideband CDMA - part II: Modes for high data-rate operation", submitted by H. Hansen, S. Affes, and P. Mermelstein to JSAC, October 2000.
	4B	"Spreading codes for direct sequence CDMA and wideband CDMA cellular networks", by E.H. Dinan and B. Jabbard in IEEE Communications Magazine, vol. 36, no. 9, pp. 48-54, September 1998.
	4C	"Near-far resistance of multiuser detectors in asynchronous channels", by R. Lupas and S. Verdú in IEEE Trans. on Communications, vol. 38, no. 4, pp. 496-508, April 1990.
	4D	"A family of multiuser decision-feedback detectors for asynchronous code-division multiple-access channels", by A. Duel-Hallen in IEEE Trans. on Communications, vol. 43, no. 5, pp. 796-807, June 1994.
	4E	"Coded asynchronous CDMA and its efficient detection", by C. Schlegel, P. Alexander, and S. Roy in IEEE Trans. on Information Theory, vol. 44, no. 7, pp. 2837-2847, November 1998.
	4F	"A matrix-algebraic approach to successive interference cancellation in CDMA", by L.K. Rasmussen, T.J. Lim, and A.L. Johansson in IEEE Trans. on Communications, vol. 48, no. 1, pp. 145-151, January 2000.
	4G	"LMMSE detection for DS-CDMA systems in fading channels", by M. Latva-aho and M.J. Juntti in IEEE Trans. on Communications, vol. 48, no. 2, pp. 194-199, February 2000.
	4H	"Spatio-Temporal Array-Receiver for Multipath Tracking in Cellular CDMA", by S. Affes and P. Mermelstein in 1997 IEEE International Conference on Communications, vol. 3, June 8-12, 1997, Montreal, Canada, pp. 1340-1345.
	4I	"Interference Subspace Rejection in Wideband CDMA: Modes for Mixed-Power Operation", by S. Affes, H. Hansen, and P. Mermelstein in Proc. of IEEE ICC'01, Helsinki, Finland, to appear, June 11-15, 2001.
	4J	"Pilot-Assisted STAR for Increased Capacity and Coverage on the Downlink of Wideband CDMA Networks", by S. Affes, A. Saadi, and P. Mermelstein in Proc. of IEEE Signal Processing Workshop on Signal Processing Advances in Wireless Communications SPAWC'01, Taoyuan, Taiwan, to appear, March 20-23, 2001.
	4K	"Near-Far Resistant Single-User Channel Identification by Interference Subspace Rejection in Wideband CDMA", by S. Affes, H. Hansen, and P. Mermelstein in Proc. of IEEE Signal Processing Workshop on Signal Processing Advances in Wireless Communications SPAWC'01, Taoyuan, Taiwan, pp. 54-57, March 20-23, 2001.

Examiner Signature

S. Affes

Date Considered

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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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#### **OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T?
<i>JB</i>	5A	"Space/Time Multipath Separation and Equalization in Asynchronous CDMA using the Spatio-Temporal Array-Receiver", by S. Affes and P. Mermelstein in 1997 IEEE 6th International Conference on Universal Personal Communications Record, San Diego,	
<i>JB</i>	5B	California, pp. 510-515, October 12-16, 1997.	
<i>JB</i>	5B	"Blind Adaptive Multiuser Detection in Multipath CDMA Channels Based on Subspace Tracking" by X. Wang and H.V. Poor in IEEE Transactions on Signal processing, vol. 46, No. 11, pp. 3030-3044, November 1998.	

Examiner Signature  Date Considered 11/9/04

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Sheet	1	of	1	Attorney Docket Number	AP660761US

## **U.S. PATENT DOCUMENTS.**

## FOREIGN PATENT DOCUMENTS

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<sup>a</sup> Application is being processed by the U.S. Patent and Trademark Office. <sup>b</sup> The application was filed on January 10, 2012.

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